

VOL. I

April 1904

NO. 5

# The Cornell Countryman



CORNELL UNIVERSITY  
COLLEGE OF AGRICULTURE  
ITHACA, N. Y.

It's Pleasant To  
Know and Use

## Tubular Separators



If you are preparing to operate a dairy, one of the most important things to know is the superiority of the **Tubular Separators**.

### Look Deep

Observe closely and you'll conclude that, with the bottom feed, which will hasten clean skimming—the Tubular bowl, turning lightly on the single ball-bearing from which it is suspended—the simple, three piece bowl, so easy to wash—the waist low supply can, overcoming top heaviness, preventing spilled milk, obviating strained backs—the wholly enclosed, entirely self-oiling, instantly accessible gears—the **Tubular Separator is much superior to all others.** No other separator has any of these features.

Catalog T will tell you much more about them. Write for it.

**The Sharples Co.,  
CHICAGO, ILL.**

**P. M. Sharples,  
West Chester, Pa.**







## POSITIONS WANTED DURING SUMMER VACATIONS

By Cornell Agriculture Students  
Summer Recess June 16—Sept. 30

Address:—Care of *The Cornell Countryman*

### COMMERCIAL FRUIT FARM

**WANTED**—Energetic, hustling young man (29) wants position during the Summer months. Experienced in all lines of farm and horticultural practice. Has executive ability and can handle men. Any part of the country where there is business.  
“PUSH,” Care of C. C.

**WANTED**—A position on farm during summer vacation. Several years experience in general farming. One year on small fruit farm. Last summer had charge of a dairy and milk route into Rochester. Best references.

C. F. S., Care C. C.

**WANTED**—Position wanted June 20 by Cornell student on a general fruit farm for the summer vacation. Address all communications to J. M. R. Care C. C.

**WANTED**—Work on a farm or nursery July 20 to Sept. 20. Have always lived and worked on a farm and have attended college two years.

“F,” Care of C. C.

**WANTED**—Work during summer vacation, well up in general agriculture and live stock. H. C. T., Care C. C.

**WANTED**—By an all-around agricultural student. Position during vacation or permanently, on a large farm. Scientific and practical knowledge combined. T. H. G., Care C. C.

**WANTED**—Position in a nursery during summer vacation. Preferably assisting in growing ornamentals and perennial plants. E. H. R., Care C. C.

**WANTED**—Work during the summer vacation by an agricultural student. Fruit and trucking preferred. Science combined with practice. R. F. C., Care C. C.

**WANTED**—Position in general Agriculture. Acted as overseer one year. Thoroughly familiar with modern methods of farming, especially fruit growing and dairying. F. S. B., Care C. C.

**WANTED**—By a student in agriculture, position during summer vacation. Preferably dairy or poultry work.

T. H. R.



We hope to make “**WANT ADS.**” a regular feature of the paper. The common tie of **CORNELL** is a good reference to employers and employees alike. Tell us your needs.

**THE CORNELL COUNTRYMAN,**  
Cornell University,  
**ITHACA, N. Y.**

★ ★ ★ ★ ★

# DE LAVAL CREAM SEPARATORS

are most decidedly

★ ★ ★ ★ ★  
**THE BEST IN THE WORLD**

After this is said, the whole Separator story is told. The moral is obvious. If you are not a DeLaval enthusiast it is only because you lack DeLaval experience.

Once a man uses a DeLaval machine, he sticks to it—it always satisfies, never disappoints. This cannot be said of imitating separators. The De Laval machines prove their supremacy by consistent, perfect results, day by day.

An interesting catalogue will be sent free on request, together with name of nearest local agent who will gladly show machines.

**THE DE LAVAL SEPARATOR CO.**

RANDOLPH & CANAL STS.,  
CHICAGO.  
1218 FILBERT STREET,  
PHILADELPHIA.  
9 & 11 DRUMM ST.,  
SAN FRANCISCO.

General Offices :  
74 CORTLANDT STREET,  
NEW YORK.

121 YOUNVILLE SQUARE,  
MONTREAL.  
75 & 77 YORK STREET,  
TORONTO.  
248 McDERMOT AVENUE,  
WINNIPEG.

## CONTENTS—APRIL, 1904

Isaac Phillips Roberts	- - - - -	Frontispiece
The Social Side of the Farm Question	- - - - -	<i>Kenyon L. Butterfield</i> - 133
Nature-Study and Agriculture	- - - - -	<i>Anna Botsford Comstock</i> - 134
The Relation of Human and Bovine Tuber-		
culosis	- - - - -	<i>Veranus A. Moore</i> - 137
The Cornell University Poultry Show	- - - - -	<i>C. A. Rogers</i> - 139
Reminiscences	- - - - -	<i>Uncle John</i> - 141
Exhibits of the Land-Grant Colleges at		
St. Louis	- - - - -	<i>C. S. Wilson</i> - 142
What Some Countries Spend for Agriculture	- - - - -	- 142
A Simple Rule for Standardizing Milk or Cream	- - - - -	- 143
Editorial Comment and Review		
Bovine and Human Tuberculosis	- - - - -	144
Government Inspection of Fruit	- - - - -	144
Buildings for the Department of Agriculture	- - - - -	145
Atmospheric Nitrogen as a Fertilizer	- - - - -	145
Corn Growing in Argentina	- - - - -	146
General Agricultural News	- - - - -	147
Cornell News		
Campus Notes	- - - - -	148
Former Students	- - - - -	150
Class of 1902	- - - - -	151

THE CORNELL COUNTRYMAN is an Illustrated Monthly Magazine, published by students and graduates of the Cornell University College of Agriculture.

MANUSCRIPT for publication should be received by the 10th of the month preceding that in which it is to be published.

SUBSCRIPTION, \$1.00 per year, single number 10 cents.

ADVERTISING RATES made known on application. We aim to advertise reliable firms only.

ADDRESS all communications to,

**The Cornell Countryman, Ithaca, N. Y.**

---

THE CORNELL COUNTRYMAN is not published by the faculty but by students of the College, and the students' pocketbooks pay for your sample copies. There are yet a few former students who have not subscribed. Let us be a unit. At least drop us a postal, and say you do not wish to subscribe, to stop this waste of good money.

BUSINESS MANAGER

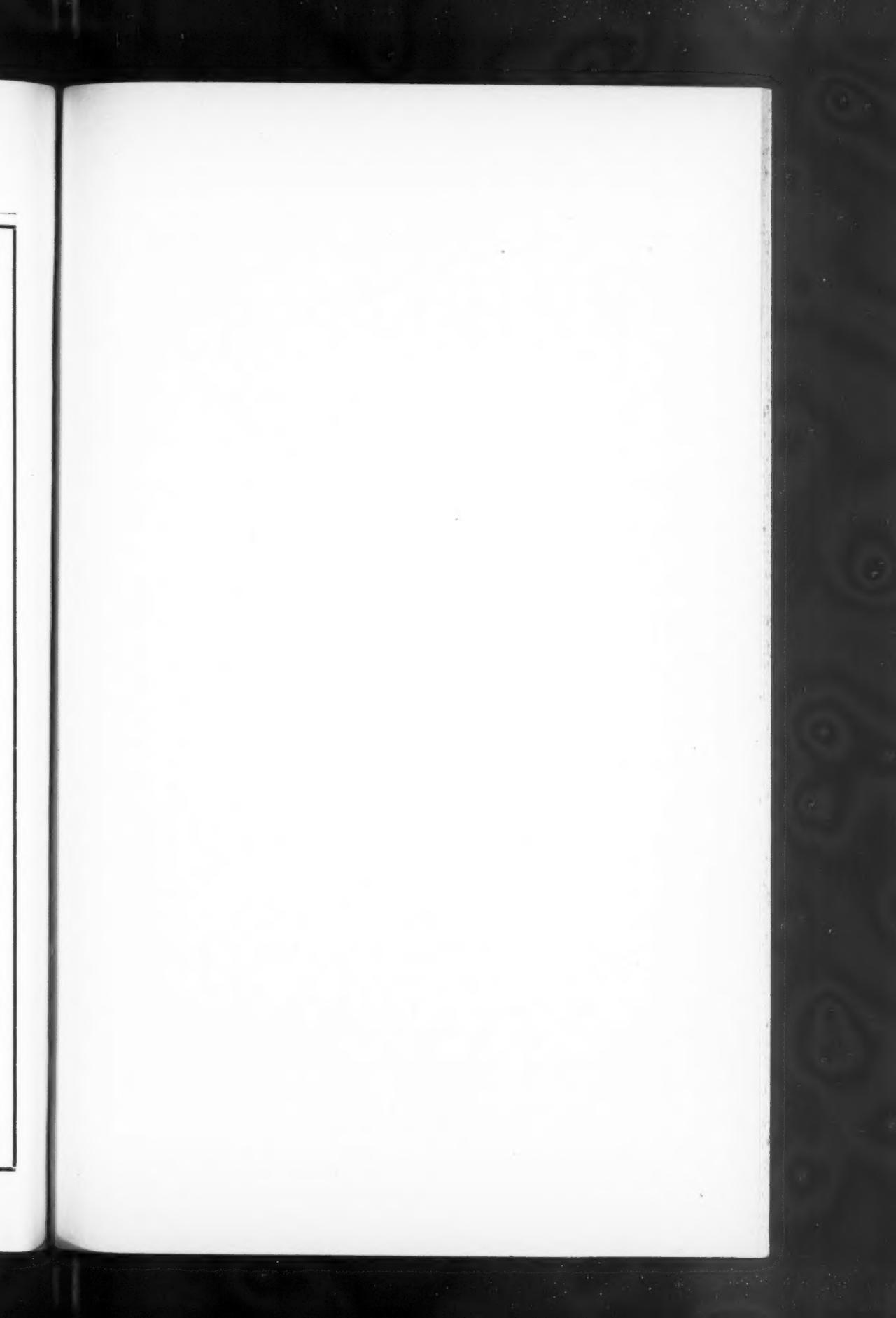
# Books of Nature

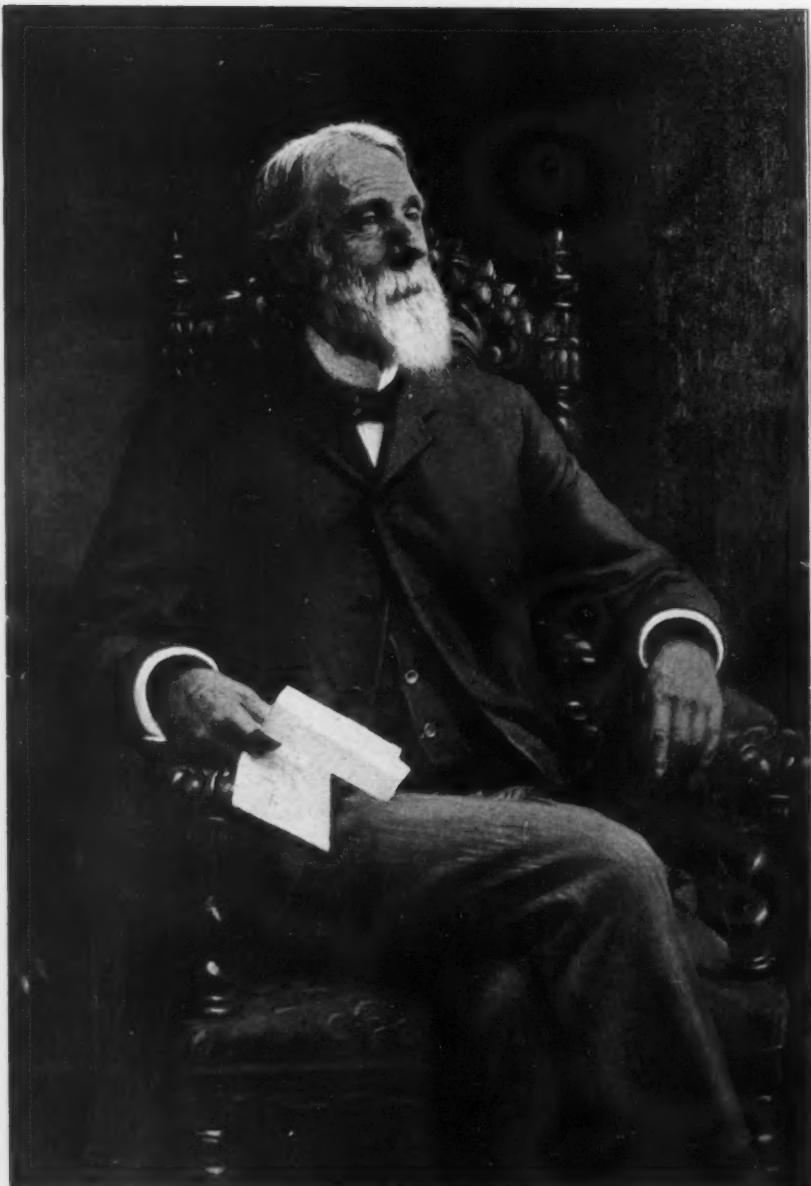
SOME OF THE BOOKS DISCUSSED  
IN THE COURSE OF LECTURES  
AT THE CORNELL UNIVERSITY  
COLLEGE OF AGRICULTURE  
O N S A L E A T

**The Corner Bookstores**  
**Taylor & Carpenter**  
**ITHACA, N. Y.**

Plants and Their Children— <i>Dana</i>	- - - - -	\$ .65
Flowers and Their Friends— <i>Morley</i>	- - - - -	.60
First Studies in Plant Life— <i>Atkinson</i>	- - - - -	.70
Chapter on Plant Life— <i>Herrick</i>	- - - - -	.60
Ways of the Wood Folks— <i>Long</i>	- - - - -	.50
Ways of the Six Footed— <i>Comstock</i>	- - - - -	.40

The Great Worlds' Farm— <i>Gage</i>	- - - - -	1.00
Elementary Text Book of Botany— <i>Bailey</i>	- - - - -	1.00
Mushrooms— <i>Atkinson</i>	- - - - -	3.00
Our Native Trees— <i>Keeler</i>	- - - - -	2.00
Our Northern Shrubs— <i>Keeler</i>	- - - - -	2.00
First Book of Forestry— <i>Roth</i>	- - - - -	1.00
Practical Forestry— <i>Gifford</i>	- - - - -	1.20





*Painting by Forbes*

*Photo by Morgan*

*J.P. Roberts*

*From the painting presented to the College of Agriculture by his students.*

# THE CORNELL COUNTRYMAN

Vol. I

APRIL, 1904

No. 5

## THE SOCIAL SIDE OF THE FARM QUESTION

By Kenyon L. Butterfield

*President of the Rhode Island College of Agriculture and Mechanic Arts*

HERE is a proverb in grange circles which expresses also the fundamental aim of all agricultural education, — "The farmer is of more consequence than the farm and should be first improved." The first term in all agricultural prosperity is the man behind the plow. Improved agriculture is a matter of fertile brain rather than of fertile field. Mind culture must precede soil culture.

But if the improved man is the first term in improved agriculture, if he is the effective cause of rural progress, he is also the last term and the choice product of genuine agricultural advancement. We may paraphrase the sordid, "raise more corn to feed more hogs to buy more land, to raise more corn, etc." into the divine, "train better farmers to make better farming to grow better farmers, etc." We want trained men that we may have an advancing agricultural art, that we may make every agricultural acre render its maximum. The improved acre, however, must yield not only corn but civilization, not only potatoes but culture, not only wheat but effective manhood.

But we may carry the point a step farther. The individual farmer is the starting point and the end of agriculture, it is true. But the lone farmer is an anomaly either as a cause or as a product, as the lone man is everywhere. As an effective cause we must have co-operating individuals, and as an end we desire an improved community and a higher-grade class of farmers.

The farm question then is a social question. Valuable as are the contributions of science to the problems of soil and plant and animal, the ultimate contribution comes from the development

of improved men. So the real end is not merely to utilize each acre to its utmost, nor to provide cheap food for the people who do not farm, nor yet to render agriculture industrially strong. The gravest and most far-reaching consideration is the social and patriotic one of endeavoring to develop and maintain an agricultural class which represents the very best type of American manhood and womanhood, to make the farm home the ideal home, to bring agriculture to such a state that the business will always attract the keen and the strong who at the same time care more for home and children and state and freedom than for millions. In other words, the maintenance of the typical American farmer—the man who is essentially middle class, who is intelligent, who keeps a good standard of living, educates his children, serves his country, owns his medium-sized farm, and who at death leaves a modest estate—the maintenance of the typical American farmer is the real agricultural problem.

If this analysis is a correct one, it will vitally affect our plans for agricultural training. The student will be taught not only soil physics, but social psychology. He will learn not only the action of bacteria in milk fermentation, but the underlying causes of the social ferment among the farmers of the last thirty years. He will concern himself with the value of farmers' organizations as well as with the co-operating influences of highbred corn and highbred steers. The function and organization of the rural school will be as serious a problem to him as the building and management of the co-operative creamery. The country church and its career will interest him fully as much as does the latest successful device for tying milch cows in the stable.

He will want to get at the kernel of the political questions that confront agriculture just as fully and thoroughly as he wishes to master the formulae for commercial fertilizers. No man will have acquired an adequate agricultural education who has not been trained in rural social science, and who does not recognize the bearing of this wide field of thought upon the business of farming as well as upon American destiny.

Research, too, will be touched with the social idea. The men who study conditions existing in rural communities which have to do with the real life of the people—the effects of their environment, the tendencies of their habits and customs—will need as thorough preparation for their work, and the results of their efforts will be as useful, as that of the men who labor in field and laboratory.

But the most profound consequence of recognizing the social side of the farm question will be the new atmosphere created at the agricultural colleges. These institutions are fast gaining leadership in all the technical questions of agriculture—leadership gladly granted by progressive farmers when-

ever the institution is managed with intelligence and in the spirit of genuine sympathy with farming. But these colleges must minister to the *whole farmer*. They must help the farmer solve all his problems, whether these problems are scientific, or economic, or social, or political. And let it be said in all earnestness that in our rapidly shifting industrial order, the farmer's interest in the political, social and economic problems of his calling is fully as great as it is in those purely scientific and technical. And rightly so. A prime steer is a triumph. But it will not of itself keep the farmer free. The 50-bushels-of-wheat acre is a grand business proposition provided the general industrial conditions favor the grower as well as the consumer. When our agricultural colleges enter into the fullest sympathy with all the rural problems, when the farm home and the rural school and the country church and the farmer's civic rights and duties and all the relations of his business to other industries—when these questions are “in the air” of our agricultural colleges, then and then alone will these colleges fulfill their true mission of being *all things to all farmers*.

## NATURE-STUDY AND AGRICULTURE

*By Anna Botsford Comstock*

*Lecturer in Nature-Study*

THE Cornell University nature-study movement is primarily an agricultural movement. It has had for its object from the first the presentation to the child of the more interesting phases of life on the farm, and the giving him some inkling of the ways of the plants and animals that creep up unnoticed to his very doorstep, with the hope that the interest thus aroused would later deter his feet from following the broad path that leads from the farm to the city. Some there be who have criticized the Cornell method and have said, “Why not teach agriculture pure and simple from the first?” To this query one might retort with quite as much reason, “Why not teach the child grammar before it learns to speak so that its first words

may be lisped according to the rules and science of the language?” Nature-study is the alphabet and the words of one syllable of agriculture, and that is why the child should begin with nature-study instead of agriculture.

Another argument has been presented, “Why not make your nature-study along the lines of agriculture solely; for instance, why should not a child begin nature-study with the cabbage rather than the hepatica.” This argument carried out logically would provide recreation for the boy in hoeing corn rather than in playing ball. Many parents in the past have argued thus, and have in consequence driven thousands of splendid boys from the country to the city with a loathing in their souls for the drudgery which seemed to be all there was of farm life.

The reason the wild flowers have been selected to begin the nature-study of plants is because every child loves these woodland posies naturally, and his happiest hours are those spent gathering them. The very first principle of modern teaching demands that the child's intelligence shall be cultivated along the line of the child's interest. The child loves the hepatica, the jack-in-the-pulpit and the trillium, and is eager to know more about them; and since the fundamental truths of plant life are quite as true in the case of the wild wood flower as in that of the carrot or the cucumber, why not let the child grow in his knowledge of plant life along his natural path instead of forcing him to knowledge along a channel obstructed by his indifference or dislike. Never yet have we known of a case where a child having gained his knowledge of the way a plant lives through studying the plants he loves, has failed to be interested and surprised and delighted to find that the wonderful things he discovered about his wild flower, may be true of the meanest vegetable in the garden, or the purslane which fights with them for ground to stand upon.

For a like cogent reason gardening is begun with flowers instead of vegetables because the young child is more interested in flowers than in anything else that grows. But after the garden work is well begun and the principles of plant-growing are better understood, the interest widens to the vegetable garden naturally. Thus in every phase nature-study at its best, begins at the point where the pupil's interest touches the outside world, and from this point widens naturally until it includes his whole environment.

Both nature-study and agriculture are based upon the study of life and the physical conditions, like soil, water, air, etc., which encourage or limit life. If we see clearly the relation of nature-study to science we may perhaps better understand the relation of nature-study to agriculture, which is based upon the sciences. Nature-study leads to a knowledge of the sciences of botany, zoology and geology as illustrated in the door-yard, the corn field, or the woods back of the house. Some people have had an idea that to know

these sciences one must go to college, and do not understand that nature has furnished them with material and laboratories on every side and close at hand. So by beginning with the child in nature-study we make for him a laboratory in the wood, the garden or along the roadside or in the field, and his laboratory materials are the wild flowers, or the weeds of the garden, or the insects that visit the golden-rod, or the bird that sings in the maple tree, or the woodchuck that sits up and whistles in the pasture. The child begins to study living things anywhere and his progress is always along the various tracks laid down by the laws of life, along which his work as an agriculturist must always progress if he is to make it an intelligent and successful work. The child through nature-study learns the way the plant grows whether it be an oak, or a turnip, or a pigweed; he learns how the root of each is adapted to the needs of the plant; and how the leaves place themselves to get the sunshine, and why they need it; and how the flowers get their pollen carried by the bee or wind; and how the seeds are finally scattered and planted. Or he learns about the life of a bird whether it be a chicken, an owl, or a bobolink; he knows how each bird gets its food and what its food consists of; where it lives and where it nests, and its relations to other living things. Or he studies the bumble bee, and discovers its great mission of pollen carrying for many flowers, and in the end would no sooner strike it dead than he would voluntarily destroy his clover patch. While learning all these things we call it nature-study, and not science or agriculture. But the country child can never learn anything in nature-study that has not something to do with science, and that has not its own practical lesson for him when he shall become a farmer.

Some have said to us, "We, as farmers, care only to know what concerns our pocketbooks; we wish only to study those things which we must, as farmers, cultivate or destroy. We do no care for the butterfly, but we wish to know about the plum-weevil; we do not care for the trillium, but we do care for the onion; we do not care for the meadow lark, but we do care

for the gosling." To say nothing of the sordidness of this view it is a physical or mental impossibility for any one to discriminate between two things when he sees only one. In order to understand the important and economic relations to the world of one plant or animal it is absolutely necessary to have a wide knowledge of other plants and animals. One might as well say to begin with, "I will look at the approaching cyclone, but never see the sky; I will look at the clover but never see the dandelion; I will look for the sheriff when he comes over the hill, but will not see any other team on the road."

So in nature-study we strive to keep the child's eyes open to all things so that when he becomes a farmer he may be able to see all things and discriminate wisely. To one thus trained the farm is the most interesting place in the world, and the farmer has the best opportunity for continuing his education in connection with his work of any man in any vocation. All of the scientists of the world have spent their lives solving problems which nature presents; and as agriculture is based upon the sciences, and as nature is the impartial teacher, so she ever presents problems to the farmer, and well is it for him when he is able to solve them successfully. Such an one feels that on the farm is a life work that demands all his intelligence, and the widest knowledge, and in exercising these he finds supreme satisfaction.

Nature-study is the effort to make the individual use his senses instead of losing them; to learn to keep the eyes open to all things whether it be the thunder-head piled up in the western sky or the flash of oriole gold from the elm; to keep the ears open to the voices that call, whether it be the song of the cricket in the path, or the song of the hen on the sunny side of the barn. Eyes open, ears open and heart open are all that nature, the teacher, requires of her pupils, and in return she will reveal to them the marvels of life, the riches of the world, and the beauty of the universe.

Nor is the appreciation of beauty in nature's realms the least valuable factor in nature-study. While dollars and

cents are necessary to success and must be looked after, yet the man or woman who looks for them alone is narrow and sordid, and lives in a prison of thick walls of selfishness, and looks out on the world through a window darkened by the bars of avarice. The man that goes into the field in the morning with the consciousness of the sunshine, and the song of birds, and the growing green of the forests and meadows; he who understands and is a good comrade of the cunning old crow grubbing in the corn field, or the meadow lark singing in the meadow; the man who is conscious of all the life and beauty about him will do his work better, and know better how to protect his crops, and he will have a richer harvest than the one who sees the dollar mark on every leaf, and hears the chink of coin in every sound.

Some years ago we received here a letter from a Canadian farmer boy, and in this letter he says, "I have read your leaflet entitled, 'The Soil, What It Is,' and as I trudged up and down the furrows every stone, every jump of earth, every sandy knoll, every sod hollow had for me a new interest. The day passed, the work was done, and I at least had had a rich experience." Who would doubt that such a man having such thoughts would plow a straighter furrow than he who sees only the earth he turns, and the horses which he perchance swears at as he goes on his dull routine blinder than the mole whose wonderful gaillard house his plow disturbs.

The ideal farmer is not the man who by chance and hazard succeeds; but he is the man who loves his farm and all that surrounds it because he is awake to the beauty as well as to the wonders which are there; he is the man who understands as far as may be the great forces of Nature which are at work around him, and, therefore, he is able to make them work for him. For what is agriculture save a diversion of natural forces for the benefit of man? The farmer who knows these forces only when restricted to his paltry crops and has no idea of their larger application, is no more efficient as a farmer than would be an engineer who knew nothing of his engine except how to start and stop it. In order to truly ap-

preciate his farm the farmer must needs begin as a child with nature-study; in order to be successful and make the farm pay he must needs continue in nature-study; and to make his declining years happy and content

and full of wide sympathies and profitable thought he must needs conclude with nature-study; for nature-study is the alphabet of agriculture, and no word in that great vocation may be spelled without it.

## THE RELATION OF HUMAN AND BOVINE TUBERCULOSIS

By Veranus A. Moore

Professor of Comparative Pathology and Bacteriology, New York State Veterinary College

THE relation existing between tuberculosis in man and in animals has been a matter of much concern during the last few years. The extreme statements, that have appeared during this time in many of our agricultural papers, have given just cause for skepticism on the part of the cattle owners concerning this very important point.

The observations and experimental work following the discovery of the tubercle bacterium seemed to establish the identity of tuberculosis of various species of animals with each other and with that of the human subject. Koch in his first publication stated that, "bovine tuberculosis is identical with human tuberculosis, and therefore a disease transmissible to man." Other investigators at that time held the same opinion, and the belief was entertained almost unanimously up to 1889, that tuberculosis in the human and bovine species was identical in its etiology; in fact, it was thought that this disease in all species of animals was due to this same cause.

The first doubt as to the identity of the tubercle bacterium in different species of animals was suggested in 1889 and 1890 by Rivolta and Maffucci who showed that there were marked differences between the human and avian tubercle organisms.

In 1898, Dr. Theobald Smith published the results of an extended investigation in which he found certain marked differences between the tubercle bacilli coming from human and bovine sources. In brief these differences were:

1. The bovine organism tends to remain shorter and thicker than the human variety.

2. The bovine bacilli are influenced less by certain modifications of the culture medium.

3. The bovine variety is more virulent for animals such as rabbits and cattle than the human varieties.

Because of these and possibly other variations, Smith states that there are *races* or *varieties* of tubercle bacilli. His results were soon confirmed by Professor Adami, of McGill University, Dr. Ravenel, of the University of Pennsylvania, and others in this country, and in Europe.

The next variation noted in the tubercle organism was that by Dubard who published papers on tuberculosis in cold blooded animals in 1897 and 1898 in which he showed that the bacterium of tuberculosis in fish had varied in an extraordinary degree from the human type. It is important to note that, notwithstanding the divergent biological characters of the tubercle bacteria from different sources—man, cattle, birds and fish—the results of investigations have led to the conclusion that they are essentially the same and that the avian variety may be changed to the mammalian types by suitable modification of the environment. These technical findings were becoming quite generally accepted when, in 1901, Koch read his memorable paper before the British Congress of Tuberculosis. The most telling sentence in that communication, at least the one that attracted the most attention was, "I feel justified in maintaining that human tuberculosis differs from bovine and cannot be transmitted to cattle." His paper, however, does not give evidence of the discovery of any essential difference between the two varieties other than

those that had already been pointed out by Dr. Smith in 1808.

It would be interesting to follow the investigations in detail since the meeting of the British Congress. Koch's paper gave a tremendous stimulus to the investigation of this disease, and a large number of bacteriologists and pathologists have instituted many investigations approaching the problem from almost every side. The results of their many inquiries tend to a more positive conclusion than was previously entertained that tuberculosis in animals and in man is caused by the same species of bacteria, although they differ in certain features. Since the development of more accurate methods for studying tubercle bacteria, the results obtained in their investigations are far more convincing than those of a former date. For this reason the recent findings by Ravenel, and de Schweinitz and Mohler in this country, and by Thomassen, de Jong, Orth, Jensen, Nocard, Arloing, Behring, Hamilton and many others abroad, of tubercle bacteria in the human subject that are capable of producing tuberculosis in cattle is very significant in pointing to the possible transmissibility of the disease from cattle to man and vice versa. Some of these workers have produced the disease in sheep, goats and swine with the bacteria obtained from human material. Again, the results of recent investigations have brought to light the interesting fact that there are great differences in the virulence of different cultures of tubercle bacilli isolated from the human subject. Further, Ravenel has shown that the biological characters of the bovine variety can be produced in the human variety by passing them through certain species of animals, and de Schweinitz, according to Salmon, has isolated from the human subject tubercle bacilli that grow like the bovine organism under artificial conditions.

If one subjects these results to a close analysis in seeking an explanation for the somewhat marked varietal differences in tubercle bacilli, the fact becomes evident that these organisms have been living under very different life conditions in the bodies of these different species of animals. In other

words the same general environmental forces that cause variations in other species of bacteria as well as in higher plant life are exercising their influence on the tubercle bacteria. In support of this, investigations have brought to light the significant fact that as a rule tuberculosis spreads from individual to individual of the same species, and that it is comparatively rare for it to cross from one species to another, although we believe that this sometimes happens.

It does not seem unnatural that the continual growth of the tubercle bacilli in the restricted environment of the human body with a temperature of 98-99 degrees F. should exercise a corresponding influence upon these bacilli, and that a like existence in cattle with a temperature of 101-103 degrees F. or in chickens with a temperature of 103-108 degrees F. together with other differences in these animals should produce equally modifying effects upon tubercle bacilli invading and living within them.

Anthrax bacteria grown at the body temperature of man will produce spores and retain their virulence, but when cultivated at a temperature a few degrees higher they soon lose the power to produce spores, their virulence disappears, and they grow in long filaments instead of short rods. Are the differences in the life conditions here greater than they are with the tubercle bacteria in the bodies of the different species of animals? As varieties are recognized in all other known species of bacteria, their existence with the tubercle bacterium is not in any sense an unusual or unexpected occurrence. Whether we wish to entertain this or any of the other explanations that have been suggested or not, we must admit that bacteriologists have been able, by means of the greater accuracy of well controlled methods, to demonstrate that there are differences between the various cultures of tubercle bacteria and that these differences are not greater than those of varieties. In dealing with the etiology of tuberculosis we are grappling with an element in the biological world, which is influenced and modified by its environment in accord with the existing laws of nature.

## THE CORNELL UNIVERSITY POULTRY SHOW

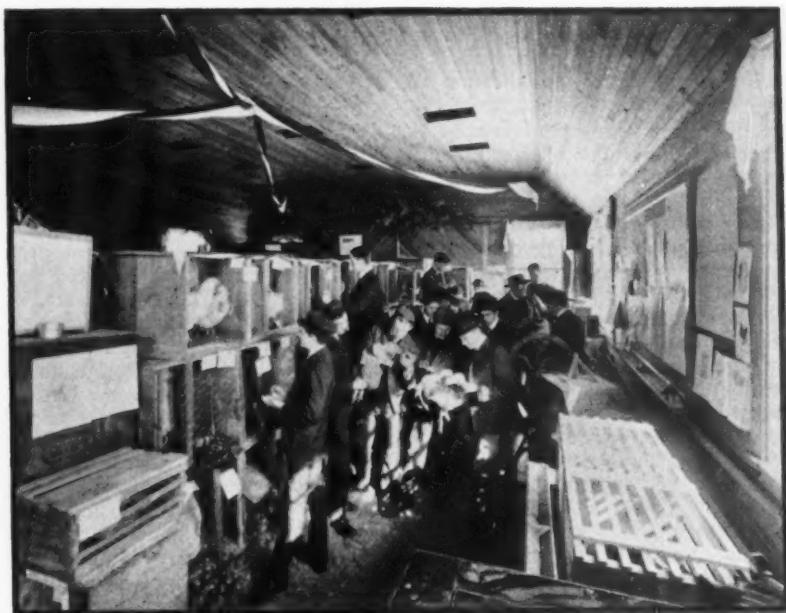
By C. A. Rogers, '05

President of the Cornell University Poultry Association

THIS year, several new departures in the College of Agriculture of Cornell University have been made. Among them is the establishment of the chair of poultry husbandry, for which position Mr. J. E. Rice of Yorktown, N. Y., was selected. Professor Rice was the first man in the country to give a definite course of lectures on poultry husbandry. These were given to a class

hibition expressly for the purpose of stimulating interest, increasing knowledge, and giving practice to the members in the preparation of poultry for exhibition, in judging and scoring, and in the organization and management of poultry shows.

The first annual exhibition was held in the judging pavilion on the University farm, March 1, 2, and 3, 1904. With the assistance of the ladies in the



SCORING FOWLS

of 50 students at Cornell University in the spring of 1892. The professorship which he now holds is one of two such positions in the United States.

Early in the season Professor Rice suggested to the poultry students the benefits that would accrue from a students' annual poultry exhibition. Plans were made and entered into with enthusiasm, to organize a Cornell University Poultry Association.

The object of this organization is to hold an annual poultry ex-

hibition, the decorating committee transformed the pavilion into an attractive exhibition hall.

This exhibition has accomplished all that was expected and, in some respect, even more than the most enthusiastic had hoped for. It has served to familiarize the students with the various breeds and varieties of poultry, and to give inside experience in the running of a poultry show. It has furthermore increased the inter-

est and enthusiasm of the students, and has attracted the attention of students and others to the poultry work which is being done at Cornell.

Each student drew by lot the breed from which he should select and exhibit two individuals. He had charge of the feeding and preparation of these for the show. Besides the University fowls, many others were on exhibition from poultrymen, including some which were shown by Mr. Wyckoff at Madison Square Garden. In all 37 different varieties of chickens, ducks and turkeys, including 110 individuals, were on exhibition.

Each student scored eight different varieties. Those who proved themselves proficient in judging are to receive a certificate of qualification to judge the breeds named in the certificate. Mr. T. E. Orr scored the show as a check to the students' scoring, and awarded first and second prizes.

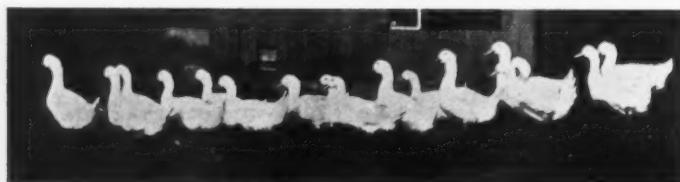
As a supplement to his work in judging and scoring, Mr. Orr gave an impressive and convincing demonstration-lecture on eight varieties of fowls. Mr. Orr is the secretary of the American Poultry Association, and is well known throughout the country as a man high in his profession. He was sent here by the Bureau of Farmers' Institutes in return for which favor Professor Rice has delivered several addresses at farmers' institutes. It is hoped that each succeeding exhibition will secure a man as well versed in his profession.

In addition to the exhibition of poultry, there were many other interesting displays. Thirty of the best poultry papers from all parts of the United States, and numerous books were arranged in an attractive booth. A large collection of eggs, which it is believed is the only one of its kind in existence, was displayed. In one corner mounted specimens of various poultry.

enemies, such as the fox, hawk, crow, skunk, weasel, raccoon, rat, etc., were arranged in a show case. Pictures of fowls, of poultry houses, and students' drawings decorated the walls. A symposium of charts, models, trap nests, ammonia testers, various kinds of scales, thermometers, sling psychrometers, leg-bands, etc., were given proper places, making a panoramic display of the poultry instruction and experiments carried on at the College of Agriculture.

The attractiveness of the show was further increased by the extensive displays sent in by various companies. Chloro-naphtholeum supplies for disinfecting the show were furnished by the West Disinfecting Company of Rochester. The Cornell Incubator Company of Ithaca, the Harding Company of Binghamton and the Vicks Company of Rochester placed their poultry feeds and supplies on inspection. The Cornell Incubator Company made a large exhibit of their incubators, brooders, bone grinders, clover cutters, patent feed pans, coops, etc. The H. E. Jennie star egg carrier, the Dixon shipping boxes, and the Humphrey bone cutter were also shown. The following incubators were running: Charles A. Cypher's New Model and Cypher's; Star; the Excelsior; Prairie State; Skinner; Pineland and Von Culin.

Chickens were hatching during the last two days of the show, and the incubator house with its fluffy little chicks received many admiring visitors. The popularity of the exhibition was shown by the fact that over 500 visitors were registered during the last two and one-half days. The chief purpose of such an exhibit is, however, not so much in what the casual visitor gains as in the training given to the students who prepared and managed it.



## REMINISCENCES

By Uncle John

MY FIRST knowledge of agricultural colleges began about 1858 when I was a lad of fifteen. At that time I was a reader of *The Cultivator*, published by Luther Tucker of Albany, a publication later merged into *The Country Gentleman*. These were the days when the agitation for colleges of agriculture began.

The common conception of what a college for farmers should be was a farm, with buildings and stock, model in all details. In other words, everything should be in a sand-papered and varnished condition, to be looked at, but like a fancy sofa pillow, too fine for any earthly use. Some few have that notion yet.

I never knew but one schoolmaster who went to the legislature. The gentleman was my teacher once upon a time. On his return from Albany, I asked him what were the prospects of the state of New York ever endowing a college of agriculture. In reply, he said that the cows would come home for many years before such a thing would happen.

From that time my desire for agricultural information remained in a comatose condition until about the close of the Civil War. Then I began to look around for books upon the subject. There were a number on the market. I bought a few of them. All were cribbed from English publications. There was not one of them that did not begin the subject back in Greek and Roman history, with an occasional reference to Egypt and the Nile. Never did an author fail to mention what Pliny had said on the subject. Most of the writers were superannuated ministers or Latin and Greek grannies.

One I remember narrated how he relieved a mother of the care of her infant by taking the child to the field and when plowing, carrying the infant in a basket fastened to the plow beam. This was preceded by a chapter admonishing farmers of their duty to God. When I came to the incident

of the baby, the basket and the plow, I knew that the writer was a sanctimonious liar, and had no confidence in anything he had to say. If he had told me that water runs down hill I would not have believed him.

Was not that enough to lay the foundation for a prejudice against "book farming" that would take a half century to live down?

As to the agricultural papers of that time, the contributors were about equally divided between the braggarts who never failed to have phenomenal results and those who had axes to grind in exploiting certain seeds and stocks.

A new era of agricultural literature began with Peter Henderson and his "Gardening for Profit." He made no attempt at belles-lettres nor at a display of literary culture, but he did tell how to raise garden truck, and he told it well. About this same time, the *Rural New Yorker*, then published at Rochester, the *Country Gentleman* at Albany, and the *American Agriculturist* at New York, came into prominence as agricultural journals. I was then a reader of the *American Agriculturist*, and from month to month weighed in the balance the work of John Johnson of Geneva, Tim Bunker, Morton and Henderson. They talked farming and the money to be made by it and not Pliny and the history of agriculture.

I know full well that even at the present time there is much unreasonable prejudice against this so-called "book farming," but in the past, there was much reason for it. Until he has studied the farmer as well as the farm, no one is qualified to teach farming to farmers. Because a man is capable in research work, it does not necessarily follow that he is competent to teach husbandmen. In the raising of agricultural crops, the farmer may succeed and the instructor utterly fail. A college of agriculture should have two distinct divisions—one for the teaching of farmers and the other for the teaching and training of investigators.

**EXHIBITS OF THE LAND-GRANT COLLEGES ST. LOUIS**

*By C. S. Wilson, '04*

An interesting feature of the agricultural display at St. Louis this year will be the exhibit of the Association of American Agricultural Colleges and Experiment Stations. An appropriation of \$100,000.00 for defraying the expenses of the exhibit was made by the last Congress. The exhibit will represent the sixty-five land-grant colleges and universities which are receiving the benefits of the Acts of Congress of 1862, 1887 and 1890.

The purpose of the exhibit is "to project the composite work of the land-grant colleges in all of its variety as one of the important elements of educational activity in the United States." The exhibit is to consist of concrete illustrations of methods and results of education and research. It is the first attempt ever made to design an exhibit of these institutions from the point of view of the educator. The general scope of the exhibit may be indicated in a way by the assignment of floor space:

Mechanic Arts .....	4,000 feet
Bureau of Education .....	450 feet
Office of Experiment Stations..	450 feet
Agriculture—	
Biological Science.....	100
Plant Production .....	2500
Zootechny and Agrotechny	2500
Rural Engineering and	
Rural Economy.....	1000 6,100
	_____
	11,000

Professor Hunt has charge of the section on animal husbandry, as well as being a member of the general committee in charge of the exhibit. He is preparing a display to show the methods of teaching. A space of 24 x 27 feet is being fitted up to represent a live-stock judging pavilion. In the center is the steer "Shamrock," which was fed at the Iowa State College, and which two years ago was the champion at the International Exhibit. Around this steer stand two wax figures in the act of judging. On

the walls and floor of the pavilion are shown the score cards (enlarged), scales, apparatus and various tools used for measuring. In order that the students may see the different kinds of score cards in use, about twenty will be put up around the room.

On one side of this exhibit will be a space given to animal nutrition under the supervision of Dr. H. P. Armsby of the Pennsylvania Station. Opposite will be the veterinary medicine exhibit, in charge of Dean D. S. White of the Veterinary College of Ohio State University.

Many departments of Cornell University, including Sibley and other colleges, have been asked to contribute to the exhibit. In the College of Agriculture, Professors Wing, Craig, Hunt, Slingerland, Rice and Fraser are preparing exhibits showing methods of instruction or research in their several departments.

**WHAT SOME COUNTRIES SPEND FOR AGRICULTURE**

Senator Proctor, reporting the agricultural appropriation bill from the committee, remarked that there were increases for several bureaus as well as for special work, over the appropriation made in the bill as it passed the House. He said that to equal the appropriations made for agriculture by France, Austria, Hungary, Russia or Japan, the area of land under agriculture in this country would call for an expenditure by the federal and state governments of \$90,000,000 a year, instead of \$10,000,000. The following figures show the amounts in cents expended in certain important foreign countries per acre of tillable land and per capita of agricultural population:

	Per acre.	Per capita.
France .....	9.8	52
Austria .....	13.3	60
Hungary .....	12.4	90
Russia (about)....	4.0	..
United States ...	1.3	35

The following table shows the area in square miles of some of the more

important agricultural countries, the number of experiment stations, and the number of square miles per station, which is called the ratio:

Country.	Area.	Stations.	Ratio.
Russia .....	8,660,305	102	84,906
Germany .....	208,830	80	2,610
France .....	207,054	71	2,916
Austria-Hungary	241,333	61	3,956
United States ..	3,692,125	60	61,535
Sweden .....	172,876	26	6,645
Italy .....	110,550	22	5,025
Belgium .....	11,373	15	758
Japan .....	147,655	15	9,844
Norway .....	124,130	12	10,344

In no section of the United States are there as many stations in proportion to area as in France or Germany. In our smallest states along the Atlantic coast we have one station for 24,000 square miles; France and Germany have eight. The south central states with their 10 stations are 40 per cent larger than all France and Germany, with 151 stations, and Texas alone, with one federal station, is 27 per cent larger than either of these countries. The ratio of stations to area in France and Germany is 96 to 1 compared with Texas, 28 to 1 compared with Minnesota and the Dakotas, and 39 to 1 compared with the Pacific states.

But there is a reason for a more liberal expenditure for agriculture in this country than in Europe. In Europe it is a condition of practically finished growth. Many years of experience have settled the crops and methods of agriculture suited to their conditions, while we are constantly introducing new crops and bringing vast new areas under profitable cultivation.

—*The Country Gentleman.*

#### A SIMPLE RULE FOR STANDARDIZING MILK OR CREAM

The following ingenious and rapid, but accurate method of standardizing milk or cream was devised by Professor Pearson of the dairy department. It is a marked contrast with the long involved rules usually given. It has been published in the *New York Produce Review and American Creamery*.

Having given two milks or creams of different richness and being required to mix them to form a third of definite percentage, draw a square, and at the two left hand corners write the percentages of fat in the two fluids which are to be mixed. In the center, place the percentage required. Put numbers at the two remaining corners which will be the differences between the two other numbers with which they will stand in line. The last two numbers, or those standing at the right hand corners, will represent the proportions that should be taken of the fluids whose percentages stand in the same horizontal line with them.

For example, suppose it is required to make a 26 per cent cream by mixing 28 per cent cream and 3 per cent milk. By placing these given numbers as stated by the rule, and finishing the square, it is seen at once that 26 per cent cream will be made if 23 parts of 28 per cent cream are mixed with two parts of 3 per cent milk. This would give a total of 25 parts of 26 per cent cream. If 100 pounds are wanted, four times as much of each ingredient should be taken, etc.

28		23
	26	
3		2
	—	25

"If I could put my words in song,  
And tell what's there enjoyed,  
All men would to my garden throng,  
And leave the cities void."

—Emerson.

## The Cornell Countryman

G. F. WARREN, Editor

SCOTT H. PERKY,	- - - Associate Editor
R. W. CURTIS, }	- - - Alumni Editors
G. N. LAUMAN, }	
MARY C. SHEPPERSON, C. S. WILSON,	} Assistant Editors
CHRISTIAN BUES,	Business Manager
W. I. THOMPSON, L. F. AYER, P. E. CLAPP,	} Assistant Managers

APRIL, 1904

**Bovine  
and Human  
Tuberculosis**

When the question of the intertransmissibility of human and bovine tuberculosis first came up, dairymen accepted the conclusion of Koch that the bovine tuberculosis was identical with the human and was transmissible to man. But preventative measures were not well started before we were informed that cattle could not be infected from man, and that, therefore, there was probably no danger of man being infected from cattle. The dairyman was, of course, more than willing to accept this view, and cannot now be blamed if he is slow when asked to again change his mind. One point should be remembered. Koch's statement that human tuberculosis cannot be transmitted to cattle—the basis for the doubts of the possibility of man's infection from cattle—has been repeatedly disproved. The disease has been produced in cattle, sheep, goats and swine with bacteria obtained from man. Unfortunate as the controversy has been in confusing the public, it has resulted in such a multitude of careful experiments that the layman may conclude that bovine tuberculosis may be transmitted to man, and he is in little danger of ever being called upon to again change his mind on the subject.

We are particularly fortunate in being able to present an article on this

important subject by Dr. Moore, who is one of the leading experimenters and authorities on the question. No one but a specialist can follow out all of the investigations, but Dr. Moore gives us a brief history and outline of the work such as every one should know.

**Government  
Inspection  
of Fruit**

According to press reports, a bill has been introduced in the New York Legislature to regulate the sale of fruit in closed boxes or barrels. It requires that every closed package be marked with: (1) the address of the grower, (2) the name of the variety, (3) the place where grown, and (4) a designation of the quality as first, second or third. If marked first quality, the fruit must be "well grown specimens of one variety, sound, of nearly uniform size, of good color for the variety, of normal shape, and not less than 90 per cent free from scab, worm holes, bruises and other defects, and properly packed."

If such a law is passed and is strictly enforced, it cannot fail to benefit the apple industry of New York. An act to regulate the amount of water in the evaporated apples would also benefit that industry. Perhaps the National Government should be the power to enforce such laws, but whatever the means, if properly carried out, the results will be good.

The Canadian "Fruit Marks Act" seems to have been well enforced and to have benefited the apple industry of that country. Since its passage, the relative prices of American and Canadian apples in the markets of Europe have been more favorable for Canada than formerly. The American product is as good as the man who packed it. The Canadian fruit is what it is marked on the outside. The consu-

mer is willing to pay a little more for a sure thing.

**Buildings for  
the Department  
of Agriculture**

One of the most noticeable things to the visitor at the United States Department of Agriculture is the crowded condition. Agriculture, the greatest of all industries, is the last to be adequately provided for. The main building is a small brick structure erected many years ago. Over half of the work is now done in made-over dwelling houses and old stores. The work on soils, animal industry, vegetable pathology and other subjects is scattered all over Washington in rented buildings. Much valuable material is stored in wooden buildings where it is constantly in danger of loss by fire.

The last Congress made an appropriation of \$1,500,000 for a building to house the departments that are now paying rent. Plans have been made which provide for the erection of ten buildings to be connected with an administration building by pavilions in such a manner as to make one harmonious unit. The advantage of these plans is that the room may be increased indefinitely, and that the result will always give the effect of one structure. The present appropriation will be used for the erection of three of the laboratory buildings. The administration building cannot be erected till further appropriations are made.

**Atmospheric  
Nitrogen as a  
Fertilizer**

Recent numbers of several scientific journals have contained discussions of a new method of securing nitrogen from the atmosphere for soil fertilization.

As early as 1785 it was demon-

strated by Priestly and Cavendish that the free nitrogen of the air could be made to combine under the influence of the electric spark. Not until recently, however, were definite attempts made to bring this method into commercial importance. From an agricultural standpoint it is of great value. Nitrogen is the most expensive of the fertilizing constituents and some scientific men now believe that the exhaustion of our known nitrate supplies, including those of South America, is not farther distant than a few generations.

The first method of combination which was tried proved too expensive for practical purposes. The oxygen was separated from the nitrogen by passing a current of air over red-hot copper with which the oxygen formed copper oxide. The nitrogen was then fixed by combination with calcium carbide, to form nitrate of lime. Calcium carbide, however, was too expensive, and scientists sought a cheaper material which would answer the same purpose. Dr. Erlwein found its substitute. By his method the nitrogen was brought into combination with a mixture of powdered charcoal and lime in an electric furnace. The product is known as calcium cyanamide and contains from 10 to 22 per cent of nitrogen. It can be used directly as a fertilizer, with no injurious effect to the plants, and has proved as efficient as ammonium salts, and only slightly inferior to nitrate of soda.

A company has been organized in Berlin for the manufacture of nitrogenous compounds by this process. Whether this can be done on a large scale at a cost that will make it available for the farmer remains to be demonstrated.

**Corn Growing  
in Argentina**

The Department of Agriculture has recently issued "Report No. 75" on "Indian Corn in Argentina." We are always interested in what is going on in Argentina for it is in so many respects the South American counterpart of the United States. We are also interested in it because it is destined to be our competitor in furnishing food for the world. In the northeast part of the country wheat growing is now giving place to corn, alfalfa and catt'e.

The colonists usually bring no capital except their strong bodies. They are ignorant and are slow to adopt new ways. The owner of the land furnishes everything—machinery, seed and food, and receives two-thirds of the crop. After a few years the renter advances to the second stage where he furnishes everything and delivers 16-22 per cent of the crop to the owner. The third step is the payment of a cash rent of \$2 to \$3 per acre. Over half the farms are rented for cash, one-seventh for a share of the crop and the remainder are farmed by owners. Land was given to government favorites in large tracts, and until recently it has been difficult to buy small farms. This is gradually changing, although a vast proportion of the country is still owned in large blocks by men who do nothing to develop it.

The methods of cultivation are improving every year, as the leaven of modern ideas penetrates to the slow-thinking colonist. He would progress much faster in the United States, because he would have the example of better farmers all around him. In northern Argentina they have a range of about five months (August to January) in which to plant and still be reasonably sure of a crop. Aside

from lack of tillage, the principle mistake of the grower is his unwillingness to give the plants room enough. In some districts corn is still sown broadcast and nothing more is done with it until it is gathered in the fall, but most of it is planted with a machine attached to the plow—simply drilled in. The rows are about twenty inches apart, but the better farmers are learning to give more room. Perhaps 100 American planters have been imported, but no check rowers were seen. Farmers speak of the North American checkerboard plan as a curious thing.

The yields are surprisingly large for such slovenly agriculture. Twenty-five bushels per acre is considered fair, except in the best regions, where yields of 70,90 and even 110 bushels are reported.

"The results they achieve are due to the marvelous fertility of the soil and the perfect climatic conditions, which, in spite of bad methods, neglect and general ignorance, give bountiful harvests to men who would utterly fail in the corn belt of the United States if they farmed as they do in Argentina; and these men cannot long continue in this manner where they are." As yet they grow only about half as many acres as does the state of Iowa, but they export over 55 per cent of the crop, while Iowa exports only 11 per cent. Lack of facilities for shipping and lack of a stable market have kept the production down. "The most far-seeing Argentines realize that they must adopt the North American policy of sending corn to market on four legs, in the condensed form of beef and pork. As soon as they fully realize, as some of them now do, that corn is the other thing they need to supplement alfalfa in the production of beef, we shall see them going in for corn, and raising it themselves on their large stock ranches, to finish their cattle."

## GENERAL AGRICULTURAL NEWS

The Agricultural College of the University of Wyoming has started a monthly publication called the *Ranchman's Reminder*. It is devoted to the theory and practice of arid agriculture. There is no other publication in that state devoted exclusively to agriculture. As the name indicates, it is undertaken for the benefit of the ranchman, and contains many valuable suggestions on the application of scientific principles to arid agriculture. It also has a strong educational side and will help to keep the Wyoming farmer abreast of the times—"the farmer can never irrigate with the water that has passed." The January number contains a plea for the establishment of farmers' institutes. "Wyoming is the only state in the Union in which series of farmers' institutes are not regularly held each year."

\* \* \*

The Bureau of Soils will map at least two areas in New York next summer. J. E. Lapham and H. H. Bennett will map that part of Cayuga county south of 43° north latitude. The northeast corner of this area will touch the Syracuse-Baldwinsville area and the northwest corner will touch the Lyons area, both of which are already mapped. Professor Jay A. Bonsteel will have general supervision of all the work in New York, and will have immediate charge of the "Dryden Sheet," an area lying south and east of Ithaca. These areas, together with what has already been done will make a total of about 3,100 square miles mapped in New York.

\* \* \*

The department of economics and sociology recently established by the Carnegie Institution, in charge of Carroll D. Wright, Commissioner of Labor, has undertaken the preparation of an economic history of the United States, embracing eleven subjects. The second of these subjects, relating to agriculture and forestry, including public land and irrigation interests, has been assigned to President K. L.

Butterfield, of the Rhode Island College. This part of the work, it is understood, will be carried on with the collaboration of experts in various branches of agriculture.—*Experiment Station Record*.

\* \* \*

The University of Missouri has decided to accept agricultural instruction in the high schools as a basis for entrance to the University. The University hopes to have agriculture generally introduced into the high schools of the state.

\* \* \*

The Department of Agriculture has arranged to conduct 30 demonstration farms in the Southern states. They will contain 40 to 50 acres each, and are located as follows: Texas, 14; Louisiana, 5; Mississippi, 3; Alabama, 3; Georgia, 2; South Carolina, 2; Florida, 1. These farms are located on private land, but will be under the direction of officers of the Bureau of Plant Industry, who will visit them frequently during the season. General farm crops will be grown for the purpose of demonstrating the practicability and methods of diversified agriculture.

\* \* \*

The first number of the *Missouri Agricultural College Farmer* appeared March 1. It is published by students of the College, and starts out with a very creditable number. "The paper will not be, like many college papers, primarily for the graduates and students of the various agricultural colleges but, first and last, will be for the farmer."

\* \* \*

Professor F. H. King of the division of soil management in the Bureau of Soils at Washington, has resigned his position. Mr. King formerly held the position of professor of agricultural physics in the University of Wisconsin. We also know him through his books on agriculture, particularly "The Soil," one of "The Rural Science Series."

\* \* \*

The University of Wisconsin has established a department of farm engineering with G. N. Knapp in charge.

# CORNELL NEWS

## CAMPUS NOTES

The following prizes were awarded to students on fowls fed and prepared by them for the poultry show: Miss H. A. Ellsworth, first prize, White Pekin ducks; Miss Rosa Ostertog, second, White Pekin ducks; John M. Lewis, first, White Leghorns; Harry Edgerton, first and second, White Leghorns; E. R. Boyce, second, White Leghorns; Paris Miner, first, Brown Leghorn; C. A. Rogers, first and second, Brown Leghorns; J. M. Robitzer, first and second, Buff Cochins; L. B. Seaton second, Buff Cochin; Henry Truckell, three seconds, Rhode Island Red, first and second, Buff Cochin bantam, first, Belgian hares; F. G. Thayer, first, White Plymouth Rock; L. B. Parker, first, White Plymouth Rock; C. H. Chapman, two seconds, White Plymouth Rock; Ralph Bell, second, White Rock; William Hoagland, two seconds, Barred Plymouth Rocks; H. E. Kinne, two seconds, Golden Wyandottes; H. Jennings, first, Golden Wyandottes; R. L. Cushman, first and second, White Wyandottes; Adam S. Hewetson, two seconds, White Wyandottes; H. F. Prince, first and second, Black Minorcas; R. R. Gould, second; C. S. Opperman, second.

\* \* \*

The list of co-operative demonstrations for the year 1904 has recently been issued by the College of Agriculture. The 40 experiments provided for are divided into 7 categories: agronomy, plant selection and breeding, horticulture, entomology, animal industry, poultry husbandry and dairy industry.

"There are three purposes in this extension experiment work: (1) To demonstrate or teach,—to instruct the co-operator in methods, to set him at the working out of his own problems, to bring him into touch with the latest discoveries and points of view. (2) To demonstrate in various parts of the state the value or inefficiency of various

new theories and discoveries,—to determine how far these newer ideas are applicable to local conditions. (3) To discover new truth, which may be worthy of record in bulletins: this is usually the least of the results that follow from such experiments because the experiments are not under perfect control nor continuously under the eye of a trained observer."

Those who desire to take up such work should apply immediately, as no more experiments will be attempted than can be handled satisfactorily. They are open to anyone. Those who are particularly interested in this kind of work should join the Agricultural Experimenters' League of New York, and gain the added inspiration that comes from being a member of such a potent organization.

\* \* \*

Mr. Flanders, assistant commissioner of agriculture in New York, gave an address on "Agricultural Law" before the Agricultural College, March 11. He spoke of the controversy over the oleomargarine law, which resulted in the passage of a law by Congress which made its sale subject to state laws, even if in the original package, and imposed a tax of ten cents per pound, if colored to imitate butter. Mr. Flanders also discussed the milk laws. The state holds the seller of adulterated milk responsible even though he did not adulterate it. The New York law requires that milk must not contain over 88 per cent of water, and must have at least 3 per cent of fat and 12 per cent of total solids. The first case tried under this law was in Albany. Thirty-nine milkmen combined and hired one of the best lawyers. The case was eventually carried to the Court of Appeals, which upheld the law. One case was cited in which a milkman was arrested with two or three cans of adulterated milk in his possession. He held that when mixed with the other cans which he was selling to the same firm it would test above the standard. The

court upheld him in his defense. The law also stipulates that no milkman shall keep unhealthy cows, or feed distillery waste or any substance in a state of putrefaction or fermentation, except ensilage, to a cow whose milk is to be sold in any form.

\* \* \*

The Agricultural Association is not behindhand in feeling the new life of the college this year. The meetings are held every other week in Morrill 19, where the familiar classroom is turned into a debating hall. The women do what they can to make the evenings pleasant. One evening maple sugar was secured and, after the program, a "sugaring off" was enjoyed. Needless to say, the debates are much more successful and much better attended when the physical man knows that there is a treat in store for him. The following is the program for the second term, part of which has already been given:

Feb. 9—Debate, Resolved, That farm laborers should organize for their own interests.

Feb. 23—Farming in China, by John A. Gilmore.

March 8—Co-operation Among Farmers, by Mr. Stephens.

March 22—Agriculture in Florida, by George N. Lauman.

April 19—The Agricultural Frontier of the United States, by Professor J. A. Bonsteel.

May 3—The History of Our Agricultural Society, by former members, now on the faculty.

May 17—Recollections of Agassiz, by Dr. B. G. Wilder.

May 31—Students' evening and election of officers.

\* \* \*

Last month Professor Craig delivered an address before the Massachusetts State Horticultural Society. He also spoke before Professor Waugh's class of the State Horticultural College at Amherst.

\* \* \*

An application has been received by the department of horticulture from a leading nurseryman of the state for six or eight young men to work in the

nursery during the summer vacation. Applications have also been received for the following: a cemetery superintendent, an assistant horticulturist in a state experiment station, and instructor in horticulture, and for various minor positions.

\* \* \*

Seventeen agricultural students are candidates for the degree of Bachelor of the Science of Agriculture, in June, 1904. Three more expect to receive the degree Master of the Science of Agriculture.

\* \* \*

Some of our short course men expect to return to take a four years' course. Never in the same length of time will they learn more than they have been taught in the twelve weeks that they were "shorthorns." The dairy course students have been very successful in getting good positions.

\* \* \*

Dr. C. E. Branson, president of the State Normal School of Georgia, spent the fifth and sixth of March as the guest of Dean Bailey. He came to Ithaca especially to see what Cornell was doing in agriculture, that he might take new ideas and inspiration back to Georgia. When he left he said that he wanted to come again and bring certain other leading men with him, that they might come in touch with the Agricultural College of Cornell.

\* \* \*

J. M. Van Hook, A. M., assistant in plant pathology in the extension department, has accepted a similar position at the Ohio Experiment Station, at Wooster. He will begin his duties May 1st.

\* \* \*

Charles Thom, Ph.D., assistant in mycology, has accepted a situation at the Connecticut Experiment Station. He will work on those fungi which are connected with the ripening of cheese. The work is in co-operation with the U. S. Department of Agriculture. Mr. H. S. Jackson, Cornell, '05, has been appointed to the position vacated by Dr. Thom.

There are 450 pots of strawberries in the forcing houses which are already setting fruit, and a second lot of the same number of pots which have not yet been started. Mr. Hunn expects ripened fruit from the first plants by the first of April.

\* \* \*

Mr. E. A. Burnett gave a very interesting lecture on "Farm Buildings," March 10. Mr. Burnett was one of the originators of the "Deerfoot Farm." He has had a wide experience in designing dairy barns for the production of sanitary milk. His lecture dealt with the problems in the construction and management of barns for high-class dairies.

\* \* \*

On the fourth of March the Agricultural Association of Cornell gave its annual banquet at the Clinton House. For several weeks beforehand the posters were displayed on the campus and in the city, and every one was talking of the fun in store. On the appointed evening the members of the College of Agriculture turned out in full force—there was an attendance of 154. Everyone came to enjoy the evening, and no one was disappointed. Between courses, the toastmaster started the college songs, and at the end of the substantial part of the repast, our Alma Mater introduced the "feast of reason and flow of soul." Dean Bailev spoke in his own inimitable style, telling what Cornell's prospects were for a new agricultural building. The memory of his words will last long after the menu has been forgotten. Then followed "bouts" between the "longhorns" and the "short-horns," hits on the faculty, as well as expressions of sincere appreciation, and home thrusts on individual students that brought hearty applause. No one could have proved a better toastmaster than Mr. Mann, with "Quips and Cranks and wanton Wiles,

Nods and Becks and wreathed Smiles,  
Sport that wrinkled Care derides,  
And Laughter holding both his sides."

## FORMER STUDENTS

A. L. Kniseley, '91, B. S., '93, M. S., University of Michigan, who from 1896-1899, was assistant chemist of the Cornell Experiment Station, is now chemist of the Oregon Experiment Station.

'85, B. Agr.—C. E. Amoroso Lima writes us from Rio de Janeiro that THE COUNTRYMAN is cordially welcome.

'97, M. S. in Agr.—H. P. Gould, '93 B. S., Maine State College, is with the Division of Pomology, Department of Agriculture, Washington.

'98, Dairy.—Adrian C. Brown, after leaving college worked for the Canajoharie Creamery Company for three years. He was then employed by the Fabius Creamery Company for one year, but left in April, 1902, to accept his present position as manager of the Cincinnatus Dairy Company's new plant at Cincinnatus, N. Y. An indebtedness of \$2,000 has been paid under Mr. Brown's management.

'98, Winter.—Fred Andrews took a special poultry course in Rhode Island College in 1900, and was employed there as assistant poultryman for eight months. He now has charge of the poultry on the Upland Stock Farm at Solvay, N. Y.

'98, Winter.—W. C. Edinger died in the summer of 1901 at Otisco, N. Y., after an operation for appendicitis. Merritt E. Smith died of a similar operation in February, 1903, at West Camden, N. Y.

'98, Dairy.—Charles A. Grant is manager of the Shady Grove Creamery Co., Hutchinson, Kansas.

'98, M. S. A.—R. T. Junghanns is situated at Bayamon, Porto Rico, where he is running a farm, paying special attention to truck farming and poultry raising. He has the contract for street sweepings of a neighboring town, and uses the refuse as fertilizer on his farm. He is also interested in real estate.

'99, B. S. A.—L. C. Harlow is professor of chemistry in the Provincial Normal School at Truro, Nova Scotia.

'99, Winter Agr.—Oscar B. Deyo, '00 Dairy, is on the home farm at Little Falls, N. Y.

'99, B. S. A.—John W. Lloyd, '97, B. S., Wheaton College, took his master's degree at Cornell in 1903, and is now assistant professor of horticulture in the University of Illinois.

'99, Special.—Leonard E. Harrison took the winter course in 1898, returning as a special student in 1899. Since leaving the University he has been working at home with his father on their "Wayside" farm at West Winfield, N. Y.

'00, Winter.—Henry T. Moon of Morrisville, N. Y., is agent for the Morrisville Nurseries.

'00, Dairy.—A. C. Qua sends his subscription from East Hartford, and adds that *THE COUNTRYMAN* is just what he has been looking for to keep him in touch with the College and with former students, many of whom he has not heard from since leaving Cornell.

'00, Graduate.—Harmon Benton, M. S., is assistant agriculturist at the South Carolina Experiment Station.

'01, B. S. A.—Bryant Fleming who, with A. F. Brinkerhoff, '02, was in charge of the office of Manning Bros., landscape architects of Boston, Mass., announces the opening of a landscape architect's office on March 1st, under the name of Townsend and Fleming, 1326 Prudential Building, Buffalo, N. Y. Mr. Fleming was abroad last summer studying the country places of England and France.

'01, B. S. A.—Adams Phillips is at Washington College, Limestone, Tenn., teaching botany, physics, chemistry and civics, besides giving two lectures a week on agriculture and also managing the college farm. He is evidently a busy man.

'01, B. S. A.—M. M. Underdown. Our attention has been called to an announcement in the 'O Estado de S. Paulo, Brazil, of the reorganization of the school of agriculture, Luiz de Queiroz, of Piracicaba. "The teaching program of the school will be more practical than theoretical. The practical side is to be especially amplified, and in such a way that the students will do the work of the fields. Those who wish, will be renumerated for their services, and in addition the profits of the establishment will be proportionately divided among the students re-

ceiving such remuneration. Mr. Underdown, now director of the Fazenda Modelo (model plantation) of Piracicaba, is to become the director of the reorganized school upon the retirement of the present director, Dr. Luciano Jose de Almeida and of Professor Aristoteles Pereira.

'01, Winter.—Asa C. Cole is working on the home farm at Little Falls, N. Y.

'02, M. S. in Agr.—C. K. McLellan, '98 B. S. in Agr., Ohio State University, is instructor in soil physics and agronomy in the North Carolina Agricultural College.

'02, Winter.—John B. Lisk is making a specialty of White Leghorns on his poultry farm at Romulus, N. Y.

'02, M. S. in Agr.—A. E. Stene, '97 B. Agr., University of Minnesota, is now assistant horticulturist at the Rhode Island College of Agriculture.

'03, Winter.—J. R. Bodurtha, the very able president of last year's "Short-horn Club," is managing Livonia Plantation at Port Kennedy, Pa. Mr. Bodurtha is taking an active interest in *THE COUNTRYMAN*, and has sent in several names of prospective subscribers.

'03, Special.—E. Norton is engaged in missionary work at Dhaud, Poona, India. His present headquarters is at the Boys' Christian Home, an orphanage where there are 300 boys. Aside from having charge of the farm work, Mr. Norton is teaching a class of thirty boys. He writes that they are now (Feb. 10) plowing for the next rainy season crops.

#### CLASS OF 1902

Special.—Floyd S. Barlow is manager of the Chase farm, South Onondaga, N. Y.

Special.—Philip S. Barto is a student at the University of Illinois, Urbana, Ill.

Special.—Grover Beckwith is on the home farm at East Pembroke. Along with his subscription Beckwith sends best wishes for *THE COUNTRYMAN*.

B. S. A.—Arthur F. Brinkerhoff is in charge of the office of Manning Bros., landscape architects, Boston, Mass.

B. S. A.—Charles G. Brown, '96, Northwestern University, is editor of the *Holstein-Friesian World*, published at Ithaca, N. Y.

Special.—Bethuel V. Colburn is on the farm with his father at Bemus Point. We wish Colburn another year of as successful management as was his during the past season.

Special.—Earl D. Crocker is farming at Sennett, N. Y.

Special.—Daniel T. Dean is on the home farm at Nichols, N. Y.

B. S. A.—George W. Hosford is assistant in agriculture at Hampton Institute, Hampton, Virginia.

B. S. A.—Charles H. Kraatz of Akron, is doing a good deal of official testing for Professor Wing this winter. He has recently been at Mr. Matteson's Homestead Stock Farm, Ilion, N. Y.

B. S. A.—Andrew G. Lauder is chemist to the La Plume Condensed Milk Co. He recently visited the University.

Special.—Clarence A. Lewis is engaged in flower and vegetable gardening at Lockport. Like some of our other fortunate boys Mr. Lewis "doubled his joys" soon after leaving Cornell.

B. S. A.—William M. Morgan died last July at Morgantown, West Va. At the time of his death Mr. Morgan was assistant horticulturist at the Experiment Station and teacher in botany in the University of West Virginia.

Special.—Dorr M. McLaury is president of the Northern and Southern Company, dealers in lumber, located at Cornell, Marion county, Fla.

Special.—L. A. Parke is holding down the farm at Wesley. We still have a vivid remembrance of the red necktie that Parke wore to the agricultural banquet at the Ithaca Hotel in the winter of 1901.

Special.—F. T. Ransom is a student in animal husbandry at the Ontario Agricultural College.

Special.—Mary B. Rice was married in August, 1902, to Mr. C. William Beebie, ornithologist of the New York Zoological Park. Mrs. Beebie's address is 2307 Laring place, University Heights, N. Y. She is at present spending the winter in Mexico.

B. S. A.—T. M. Seward is vice-

president of the A. H. Schultze Co., 198 West Broadway, New York city.

B. S. A.—Charles W. Wenbourne is secretary of the Horse World Co., publishing the *Horse World*, Buffalo, N. Y.

Special.—E. C. Welsh is a part owner in the Northern and Southern Company mentioned under McLaury.

Special.—E. T. Wheeler upon leaving Cornell was immediately taken into partnership by Barker & Co., of Billerica, Mass., and so did not return to the University as he had intended. The firm grows nothing but carnations and ships direct to Boston.

Special.—H. S. Williams is in the employ of Mr. Van Norden of Port Chester, breeder and importer of West Highland cattle.

Special.—Horace George Williams is a grower of flowering and cultivated plants at Silver Lane, Conn. Mr. Williams began two years ago with 3,000 feet of glass, and has had such good success that this summer he intends to double the area. At the time of writing, February 15, he was busy with seed-beds for outdoor planting, and was also stocking up with carnation plants for next year's crop. During the summer Mr. Williams is general overseer on the farm of G. A. and H. B. Williams, who conduct the largest market garden farm in that vicinity.

Of the following '02 special students we know only the original home address: Chester A. Burton, Brocton; Guy C. Johnston, Bloomington, Ill.; Charles H. Kenyon, Morton; F. L. Miner, Oxford; George F. Orr, Scranton, Pa.; George H. Roth, Brooklyn, and L. J. Singewald, Baltimore, Md.

## Orr's Wyandottes

### Famous the Country Over

Silvers for 24 years, (Now 10 pens)  
Whites for 8 years, (Now 9 pens)  
Partridge for 5 years, (Now 5 pens)

Also Goldens, Buffs, Blacks, Silver  
Penciled and Five Grand Pens of  
Buff Orpingtons

Prize winners at leading shows, N. Y., Phila., Pan-American, Hagerstown, Pittsburg, Cleveland, Indianapolis and Chicago in our 35 yrs.

EGGS \$1.50, \$2, \$3 and \$5 PER SITTING

Booklet Free if you name your variety

T. E. ORR, Box 99, Beaver, Pa.

## THE WATSON FOUR-ROW POTATO SPRAYER

Entirely Automatic, with Agitator and Brushes, which  
Stirs the Liquid and Keeps the Suction Strainer Clean

Wheels and Nozzles Adjustable for rows 2 1-2 to 3 feet apart



Fitted with thills for one horse : tank holds sixty gallons.

Platform is skeleton form as shown, made from hardwood strips five inches wide and four inches apart.

Double cylinder pump, each cylinder  $2\frac{1}{2}$  x 6 inches, separate suction pipes and all working parts are made of brass. No leather valves.

The best automatic mechanical agitator fitted with automatic brushes to keep suction strainers clean insuring a steady and continuous supply, in through solution, and without clogging.

Wheels 50 inches in diameter, adjustable on the axle for rows planted  $2\frac{1}{2}$  to 3 feet apart ; 3-inch tire Axle 1 7-16 inch turned steel ; 3 habbited boxes, one at the center of the axle to prevent springing.

Pressure adjustable, 50 to 100 pounds, at the will of the operator by use of a back pressure safety valve, which will enable the pressure to be gotten up and the mixture thoroughly stirred before commencing to spray.

Four improved single Vermorel nozzles, adjustable to spray potatoes planted in rows two and one-half to three feet apart, also a vertical adjustment of pipes and nozzles to allow a privilege of twelve inches up or down : extreme height forty inches from the ground.

Nozzles and pipes as shown are in position for spraying four rows of potatoes when the tops are small ; may be removed for passing through gates by loosening two thumb screws.

Will spray orchards, shrubs or any crop where it can be moved about and may be readily converted into a hand sprayer.

Further information promptly upon application.

The WATSON will spray from thirty to forty acres of potatoes, cotton, tobacco or vegetables for a day's work, and without waste of liquid.

This machine can be furnished with pole for two horses and with long evener and long neck yoke, also with 100-gallon tank at additional cost. It can also be furnished with one or two leads of hose for orchard spraying.

We have a WATSON 4-row Potato Sprayer of your manufacture and like it very much.

EASTERLING BROS., Martin, Fla., Jan. 10, '04.

Our WATSON 4-row Potato Sprayer works beautifully and we are much pleased with it.

C. B. WOOLEY, Arcade, N. Y., Aug. 13, '03.

We are so well pleased with the WATSON that we want you to send us another by first freight.

BURT OLNEY CANNING CO., Oneida, N. Y., July 10, '03.

**FIELD FORCE PUMP CO., Elmira, N. Y.**

If you appreciate THE COUNTRYMAN, mention us to advertisers.

## **THE NEWEST AND BEST AGRICULTURAL BOOKS**

**Are Included in the  
Rural Science and Garden Craft Series**

**Edited by Professor Bailey**

**SEND FOR SPECIAL LIST**

**Cornell Co-operative Society**

**28 Morrill Hall, CORNELL  
CAMPUS Ithaca, N. Y.**

### **PRACTICAL HAND BOOKS FOR THE FARMER AND STUDENT**

**FEEDS AND FEEDING—*W. A. Henry.***

A hand book for the practical feeder. 658 pages. Cloth, \$2.00.

**FRUIT HARVESTING, STORING, MARKETING—*F. A. Waugh.***

With statistics of fruit package laws, commission dealers, cold storage, etc. 232 pages. Cloth, \$1.00.

**LANDSCAPE GARDENING—*F. A. Waugh.***

A treatise on the principles governing out door art with suggestions for their application. 152 pages. Cloth, 50 cents.

**SYSTEMATIC POMOLOGY—*F. A. Waugh.***

A guide for the study of varieties, and a manual for the scoring and judging of fruits. 275 pages. Cloth, \$1.50.

**SPRAYING CROPS—WHY, WHEN AND HOW—*C. M. Weed.***

Fourth edition, embodies the latest practical information of fruit growers and experimenters. 136 pages. Cloth, 50 cents.

**ANIMAL BREEDING—*Thomas Shaw.***

405 pages. Cloth, \$1.50.

**SEND FOR PRICE LIST OF OTHER BOOKS.**

**ORANGE JUDD COMPANY**

PUBLISHERS AND IMPORTERS  
52-54 LAFAYETTE PLACE, NEW YORK

**BE SURE TO MENTION THE CORNELL COUNTRYMAN**

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

## **THE PROGRESSIVE FARMER**

As well as the business man needs printed stationery. The expense is trifling but the effect is far reaching. It gives you a business standing and enables Uncle Sam to promptly return stray pieces of mail matter.

## **MILK MEN**

*NEED OUR SANITARY MILK TICKETS*

Be the first in your town to adopt this very necessary article. It will mean satisfied customers. Send for samples and prices of any of the above

## **THE IPC PRESS**

PUBLISHERS  
PRINTERS  
ENGRAVERS

Opp. City Hall, ITHACA, N. Y.

Linotype Composition for the Trade

Sir:-It will be advantageous to you to advertise with us under **MEN WANTED**. Let us bring employers and employees together. 30 cents per inch.-The Cornell Countryman, Ithaca, N. Y.

## **ROBINSON**

**Photographer for Class of 1904**

Does only High Grade Work

205 NORTH AURORA STREET

## **G. F. Morgan**

**THE NEW CORNELL UNIVERSITY PHOTOGRAPHER**

Try him and see what he can do. Campus Views, Lantern Slides, and all kinds of reproductive work his specialty.

Phone 169 or address 127 Gascadilla Place,  
Ithaca, N. Y.

## **First Impressions are Lasting Ones**

You want to make them favorable. Nothing creates a better impression upon your correspondents than good stationery neatly printed \*\*\*\*\*

### **Attractive Printing**

on good paper is our business. Our prices are right too. Let us prove it to you



**STEPHENS PUBLISHING COMPANY  
ITHACA, NEW YORK**

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

**IRON AGE**

For over two generations the Iron Age implements have been helping farmers to do better. Every year in that time we have been making these labor savers better than before. Today they are successfully beyond question; durable beyond comparison; economical beyond doubt.

**Does Saving ONE or TWO MEN At the Cutter Mean Anything**

in ensilage cutting time? Self Feed on "Ohio" cutters does that and more, and increases capacity 33½%.

**1903 "OHIO" Blower Elevators**

solve the Blower problem. They successfully elevate ensilage into silos up to any height, as demonstrated by abundant proof in 1903 catalogue. **10** and **12** H P. Engines drive Nos. 13, 16, 18 and 19 Cutters with blowers, and all other sizes "Ohio" Ensilage Cutters. In capacity "Ohio" Cutters lead; 10 to 30 tons per hour.

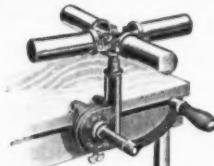
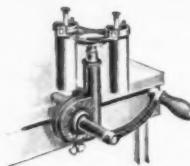
**1903 Shredder Blades** (patent applied for) are interchangeable with knives, all sizes. They put corn stalks into best condition for feed, running at normal speed.

*Our absolute guarantee goes with every machine. Made by*

**The Silver Mfg. Co., Salem, Ohio.**

"Modern Silage Methods" 10 cents, coin or stamps.

Established 1844.



**Some of Our Specialties**

"SIMPLEX" LINK-BLADE CREAM SEPARATOR.

"SIMPLEX" COMBINED CHURN AND BUTTER WORKER.

"FACILE" BABCOCK MILK TESTERS, HAND and POWER.

"B. & W." MILK HEATERS, DOUBLE SURFACE.

Manufacturers and Handlers  
Dairy Creamery Apparatus and Supplies.

**D. H. BURRELL & CO.,  
LITTLE FALLS, N. Y.**

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

WANTED—Good clean copies of Cornell Bulletins. 1, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 26, 27, 28, 29, 30, 31, 32, 34, 37, 38, 39, 41, 42, 43, 46, 60, 64, 67, 88, 90, 91, 94 <sup>95</sup>, <sub>96</sub>, 100, 115. State price desired.—THE CORNELL COUNTRYMAN, Ithaca, N. Y.

**OAKHILL STOCKFARM,  
CANASTOTA, N. Y.**

(Established 30 years).

Jersey Cattle, bred for butter. Cheshire Swine, bred for prolificacy, lean meat, and quick maturity. Poultry for beauty and utility, including Rose-comb, Brown and White Leghorns, and all kinds of Ducks.

**R. D. BUTTON & SON.**



Ask the most successful poultrymen.

**Peep-O'-Day  
BROODERS**

have been on the market 12 years. Used exclusively on the best farms in America. Catalogue free.

Made only by

Cornell Incubator Mfg. Co., Box 57, Ithaca, N. Y.

EAST HOMER, N. Y., Sept. 21, 1903.

Cornell Incubator Mfg. Co.  
Gentlemen: I received your shipment of three No. 2 Peep-O'-Day Brooders in O. K. condition, and I am pleased to say that I think they are the best brooders manufactured.

Yours very truly,

FRED HOWE.

**EGGS MAY BE EGGS**

but drugs are not always drugs. The kind sold by

**T O D D**  
are really DRUGS, pure, reliable, and priced accordingly.

**AURORA STREET**

**Incubator Advancement**

Cornell Incubator—heated and ventilated in Nature's way. Always gets proper moisture lines at the right time. Result: Most vigorous chicks ever hatched artificially. Gold Medal—Highest Award—Pan American Exposition. Catalogue free. Made only by

CORNELL INCUBATOR MFG. CO.

Box 57 Ithaca, N. Y.

Cornell Incubator Mfg. Co.,  
Ithaca, N. Y.: Dear Sirs—  
We put the Cornell Incubator to trial twice; 1st time hatched all but four fertile eggs, but one fertile egg, the strongest chick we ever hatched in incubators.

Your very truly, J. D. WILCOX & SON.

Worcester, N. Y. Sept. 26, 1903.

# PRIME COTTON SEED MEAL

Is the best and most profitable food for cattle and sheep

Reports from the principal Agricultural Experiment Stations show the great value of Cotton Seed Meal for feeding. The farmer gets back the cost of the Meal in the increased value of manure for fertilizing purposes. It is of special value in feeding milch cows.

It Makes  
**More Milk  
Richer Cream  
Firmer Butter**

Cottonseed meal is enriching the food of dairy cattle all over the world, more than two hundred thousand tons being exported annually for this and kindred uses.

A large quantity goes back to the fields every year as a fertilizer, its richness in nitrates giving it special value as a plant food. As a special aid to the tobacco raiser it is unequalled for producing the color, quality and texture of leaf that is most desired by buyers and handlers of "the weed."

For sale by all dealers in feed. Pamphlets mailed free on application to

**THE AMERICAN COTTON OIL CO.,**

27 Beaver St.,  
**NEW YORK, N. Y.**

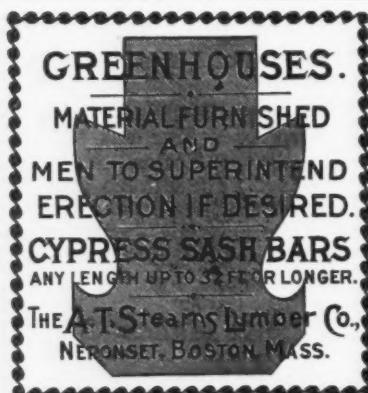
If you appreciate THE COUNTRYMAN, mention us to advertisers.

## Boys and Girls

is a beautiful out-of-door magazine for children. Subscription, \$1.00 per year. Spring is coming. Interest the children in out-door work. Address

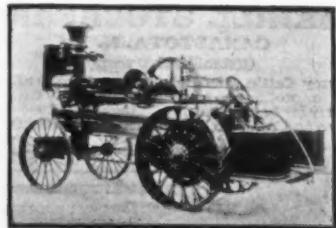
### BOYS AND GIRLS

Ithaca, N. Y.



## John B. Lang Engine Works

ITHACA, N. Y.



Traction and Portable Engines in Sizes 10 to 25 H. P.

The above cut represents the most complete and efficient traction engine on the market. For power, simplicity, durability and economy of operation, this machine ranks first. We guarantee against defective material and workmanship for one year. SEND FOR CATALOGUE.

## THE CHICK IS WILLING



to do its part all right if you give him a fair chance, but he really ought to have that chance. Give us the egg, a fairly good egg, and then watch the

### Reliable Incubators & Brooders

get in their work. This matter of selecting the right machine means success or failure, chicks or no chicks, dollars in pocket or out. Sizes to suit all. Have you

a copy of the *20th Century Poultry Book* in the house? We have gotten out good catalogues in the past, but this one stands alone. A treatise of the whole poultry question by eminent poultry men. *The Reliable Poultry Farm*, with 120 pens of thoroughbred poultry, furnishes material for an interesting chapter. Sent anywhere upon receipt of 10 cents.

**RELIABLE INCUBATOR & BROODER CO., BOX B2 QUINCY, ILLINOIS.**



## WHITE LEGHORNS

Bred for size, vigor, prolificacy and extra large snow white eggs

### Nine Years Developing Our Strain

Catalogue Free

## WHITE & RICE,

ROUTE 7,  
YORKTOWN, N. Y.

If you appreciate THE COUNTRYMAN, mention us to advertisers.

## STEEL ROOFING

100 SQUARE FEET.....\$2.00



We Pay Freight East of Colorado.  
Strictly new, perfect, semi-hardened  
steel sheets, 6 and 8 foot long, the best  
 roofing, also selling you can use.  
Nails free. Painted two sides. Flat, cor-  
rugated or V crimped. Write for free  
catalog 73 on material from Sheriff's  
and Receiver's sales.

CHICAGO HOUSE WRECKING CO.  
West 85th & Iron Sta., CHICAGO.

## The Cornell Countryman

will exchange copies of Vol.  
1, No. 1, December, 1903,  
for May and June numbers,  
1904

SEND THEM ALONG

Cypress Greenhouses

Cypress or Yellow Pine

## SILOS

Write for Information



## THE A. T. STEARNS LUMBER CO.

BOSTON, MASS.



## SLUG SHOT KILLS INSECTS For Bugs and Blight.



**WANTED**—A few reliable men as selling agents for our products in various parts of the United States and Canada.

Hammond's Paint & Slug Shot Works, Fishkill-on-Hudson, N. Y.

## GULF CYPRESS GREENHOUSE MATERIAL

Cut and Spliced Ready for Erection

Hot-Bed Sash, Boilers, Pipe Fittings, Ventilating Apparatus

GLASS AT WHOLESALE

Try our Seal-Tight Liquid Putty, Sample Gallon 75c.

**S. JACOBS & SONS,**

Manufacturers, 1365-1373 Flushing Ave., Brooklyn, N. Y.

We furnish everything for building

Send for catalogue

## THE AMERICAN FANCIER

Issued Every Week at Johnstown, N. Y.

If you are interested in Thoroughbred Poultry and wish to keep posted on all matters pertaining to the fancy, ours is the paper for you. It is edited by J. H. DREVENSTEDT, the well known judge of Poultry.

Address: THE AMERICAN FANCIER,

JOHNSTOWN,

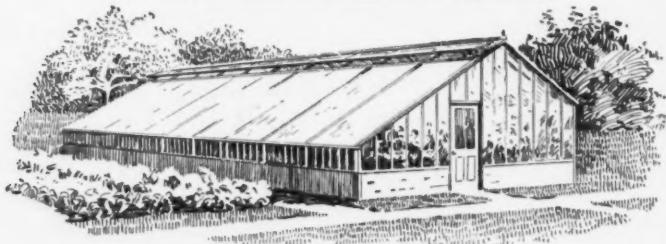
NEW YORK

If you appreciate THE COUNTRYMAN, mention us to advertisers.

## GREENHOUSES AND CONSERVATORIES

erected complete with our Patent Iron Construction.

Special attention given to designing and locating ranges of glass to harmonize with surroundings. Plans and estimates on application.



**Material of all Kinds Ready for Erection.  
Air Dried Red Gulf Cypress. Strictly Free from Sap.  
"Special" Greenhouse Putty, Glass, Etc.**

Prices upon application

## LORD & BURNHAM COMPANY,

New York Office, St. James Bldg., Broadway & 26th St.

General Office and Works, Irvington-on-Hudson.

Greenhouse Construction Catalogue, and Greenhouse Heating and Ventilating Catalogue mailed from New York Office on receipt of 5 cents postage for each.

## AMERICA'S LEADING HORSE IMPORTERS A RECORD OF SUPERIORITY NEVER APPROACHED.

At the International Live Stock Exposition, 1903, one of our 2200 pound stallions won First prize and Championship. One of our sensational acting Coach stallions won First prize and Championship. Four Percherons won First in collection. Our stallions entered into competition ten times and five times won First prize, none of our competitors in all these contests won more than one First prize.

At the Great Annual Show of France, held at Evreux, June, 1903, our stallions won First, Second, Third and Fourth prizes in every Percheron stallion class; also won First as best collection.

At the show of the Societe Hippique Percheronne de France held at Nogent-le-Rotrou, June 1903, our stallions won every First prize, over Forty prizes in all. Two groups were made up of our exhibit on which we won First and Second.

At the American Royal, 1903, our Percheron stallions won every First prize. One of our Percherons won Championship. Five of our Percherons won First as best collection. Our French Coach stallions were equally successfully, winning every First prize.

At the Iowa State Fair our Percheron stallions won Three First prizes and First in Collections.

At the Minnesota State Fair our French Coach stallions won every possible First prize and Grand Sweepstakes.

At the Ohio State Fair our stallions won Fourteen First prizes out of a possible fifteen.

At the Indiana State Fair our Percherons won Three First prizes. Our French Coachers won every possible prize.

At the Kansas State Fair our Percheron and French Coach stallions won every First prize including Grand Sweepstakes.

Our last importation and the fourth for us in 1903, arrived in Columbus, Tuesday, Dec. 8th. During the year we have imported from France four times as many Percheron and French Coach stallions as have been brought over by any body else.

Ours are the very best, we import more of them, sell more of them and therefore can furnish our customers a better horse for the money than can be bought elsewhere.

If your neighborhood is in need of a good stallion, let us hear from you.

### McLAUGHLIN BROS.,

St. Paul, Minn.

Columbus, Ohio

Kansas City, Mo.

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

*If you appreciate THE COUNTRYMAN, mention us to advertisers.*

S

ur-

SON.

ita-

von  
irst  
red  
all

me,  
in  
on.  
nce  
ery  
up

von  
ip.  
nch  
irst

ree

irst

en.

nch

irst

ee.

and

can

to.



# CORNELL UNIVERSITY

## College of Agriculture

The College of Agriculture is one of several co-ordinate colleges comprising Cornell University. The work of the College of Agriculture is of three general kinds: The regular teaching work; the experiment work; the extension work. The courses of instruction fall in the following groups:

1. Four-year course, leading to the degree of Bachelor of the Science of Agriculture. As a variation, the last two years may be chosen in subjects pertaining to landscape architecture and outdoor art. In the Graduate Department of the University, students receiving the above degree may secure the Master's and Doctor's degrees (M. S. A., and Ph. D.).
2. Special two year courses. (a) Agricultural Special. (b) Nature-Study Special.
3. Winter-Course of 11 weeks: (a) General Winter Course. (b) Dairy Course.

### Staff of the College of Agriculture, 1903.

L. H. BAILEY, Director.

I. P. ROBERTS, Professor of Agriculture, Emeritus.

#### Agronomy:

T. F. HUNT,  
S. FRASER,  
J. L. STONE,  
J. W. GILMORE,  
G. W. TAILBY.

#### Animal Husbandry:

H. H. WING,  
J. M. TRUMAN,  
J. E. RICE (Poultry Husbandry).

#### Dairy Industry:

R. A. PEARSON,  
J. M. TRUMAN,  
H. C. TROY,  
W. W. HALL,  
W. E. GRADY.

#### Horticulture:

JOHN CRAIG,  
R. S. NORTHRUP,  
S. W. FLETCHER,  
C. B. HUMM.

#### Soils:

J. A. BONSTELL.

#### Agricultural Chemistry:

G. C. CALDWELL,  
G. W. CAVANAGH,  
S. A. BIRKILL.

#### Entomology:

J. H. COMSTOCK,  
M. V. SLINGERLAND,  
A. D. MCGILLIVRAY,  
W. A. RILEY.

#### Plant Pathology:

JAMES M. VAN HOOK,  
B. H. WENTZEL.

#### Rural Economy:

L. H. BAILEY,  
G. N. LAUMAN.

#### Nature Study:

J. W. SPRINGER,  
MRS. COMSTOCK,  
ALICE G. McCLOSERY.

#### Extension Teaching:

S. W. FLETCHER.

#### Reading-Courses:

S. W. FLETCHER,  
MARYNA VAN RENSSELAER.

# ISN'T IT A BEAUTY



The Illustration herewith is of the

1904 Model

## U. S. Cream Separator

With Low  
Supply Can

Those who desire a separator with a Low Milk Receiving Can will find just what they are looking for in the 1904 Model U. S. Separator.

Another improvement is the increased ease of operation. The U. S. has always been noted for its easy running, but by making certain changes it now

## Runs Easier Than Ever

Dairymen should also remember that THE U. S. EXCELS in Clean Skimming and Durability. HOLDS WORLD'S RECORD. Average test for 50 consecutive runs—.0135.

Write for illustrated catalogues.

**Vermont Farm  
Machine Co.  
BELLows FALLS, VERMONT**